REMARKS

Claims 1-22, and 48-58 are pending. Claims1, 50-52, 55, and 58 are amended herein. No new matter has been added by these amendments, support therefore being found throughout the application as filed (e.g. see p. 16, lines 7-8).

35 U.S.C. 102/103 Rejections

Callahan

Claims 1-19, 21, 22, 48-52, and 55-58 are rejected under 35 U.S.C. 102(b) or, alternatively, under 35 U.S.C. 103(a) over Callahan et al (US 4,976,897). Applicants respectfully traverse.

The Office asserts that Callahan's "coating comprises a UV resin and ethoxylated bisphenol A diacrylate (table 1, column 4, lines 20-21). Either one of them reads on Applicants' difunctional surface-modifying molecules." Applicants respectfully traverse.

Callahan provides ethoxylated bisphenol A diacrylate as an optional reactive diluent that can be added to a UV reactive unsaturated polymeric material to provide, for example, acceptable viscosities, photoresponse, volatility, and solubility (See col. 3, lines 37-39; col. 4, lines 4-50). However, Callahan's reactive diluent, even if could be considered a difunctional molecule, does **not** coat the hydrophobic substrate. Rather, Callahan's UV reactive unsaturated polymeric material coats the substrate.

Applicants utilize a difunctional monomer not as a reactive diluent, but as its UV reactive unsaturated polymeric ingredient of the resin mix. According to Applicants, the difunctional monomer is the resin mix. As set forth in Applicants' claims, the hydrophobic substrate is coated with the difunctional surface-modifying molecules.

Thus, Callahan's optional use of a reactive diluent, such as ethoxylated bisphenol A diacrylate, in a resin composition would **not** read on Applicant's hydrophobic substrate coated with difunctional surface-modifying molecules.

With respect to Callahan's UV resin, Applicants respectfully submit that Callahan's UV resin, which can include UV reactive unsaturated polymeric material, a photocatalyst, and, optionally, a reactive diluent, also would not read on Applicant's hydrophobic substrate coated with difunctional surface-modifying molecules. The Office asserts that "Callahan discloses the use of acrylic acid as a hydrophobic monomer, which reads on Applicants' negatively charged group" (Page 2-3 of the 12/14/06 Office action) and that "Callahan discloses the use of dimethylaminoethly methacrylate as a hydrophilic monomer, which reads on Applicants' positively charged group" (Page 3 of the 12/14/06 Office action). Callahan provides, as a potential UV reactive unsaturated polymeric material, acrylated acrylic resins (see col. 3, lines 37-44). Callahan also optionally provides, as a reactive diluent, dimethylaminoethly methacrylate (see col. 4, lines 4-17). It is respectfully submitted Callahan's coating, resulting from a UV curable resin mixture which contains these components, would **not** result in a membrane coated with difunctional surface-modifying molecules.

Thus, it is respectfully submitted that claims 1, 50-52, 55, and 58 are patentable over Callahan. Claims 2-22, 48-49, 53-54, and 56-57 depend from claims, 1, 50-52, 55, and 58 and, thus, also are patentable over Callahan.

Callahan and Steuck

Claim 20 is rejected under 35 U.S.C. 103(a) over Callahan and Steuck et al (US 4,618,533).

Applicants respectfully traverse. As set forth above, neither Callahan's reactive diluent (ethoxylated bisphenol A diacrylate) nor UV resin would provide a membrane coated with difunctional surface-modifying molecules.

Steuck is cited for the asserted use of polyethylene and polyvinyldene fluoride porous membranes. However, Steuck, in combination with Callahan still would not remedy the above-noted deficiencies.

Accordingly, claim 1 is patentable over Callahan and Steuck. Claim 20 depends from claim 1 and, thus, also is patentable over Callahan and Steuck.

Witham

Claims 1-19, 12-17, 19, 21, 22, and 48-58 are rejected under 35 U.S.C. 102(b) or, alternatively, under 35 U.S.C. 103(a) over Witham et al (US 6,193,077).

Applicants respectfully traverse.

Whitham describes polyether sulfone membranes that are coated with plasma polymerized polyalkylene oxide polymer and polyfunctional monomer. However, Whitham at least does not teach or suggest a hydrophobic substrate coated with difunctional surface-modifying molecules crosslinked by UV, gamma, or X-radiation, to form a crosslinked hydrophilic polymeric network at the surface of the membrane.

Further, according to Witham, hydrophilization of polyethersulfone membranes is by way of co-polymerization of polyalkylene oxide and a polyfunctional monomer. This is distinct from hydrophilization coating achieved by the polymerization of a polyfunctional monomer, which is the practice of the present invention. Applicants teach that without co-polymerization, a hydrophilizing coat consisting of at least a di-functional monomer can successfully be employed onto a hydrophobic substrate, provided its structure embodies hydrophobic portions to associate with the substrate, and hydrophilic portions, and unsaturation susceptible to polymerization with energy.

Thus, it is respectfully submitted that claims 1, 50-52, 55, and 58 are patentable over Witham. Claims 2-22, 48-49, 53-54, and 56-57 depend from claims, 1, 50-52, 55, and 58 and, thus, also are patentable over Witham.

Witham and Steuck

Claim 20 is rejected under 35 U.S.C. 103(a) over Witham and Steuck.

Applicants respectfully traverse. As set forth above, Whitham at least does not teach or suggest a hydrophobic substrate coated with difunctional surface-modifying molecules crosslinked by UV, gamma, or X-radiation, to form a crosslinked hydrophilic polymeric network at the surface of the membrane, or polymerization of a polyfunctional monomer.

Steuck is cited for the use of polyethylene and polyvinyldene fluoride porous membranes. However, Steuck, in combination with Witham still would not remedy the above-noted deficiencies.

Accordingly, claim 1 is patentable over Witham and Steuck. Claim 20 depends from claim 1 and, thus, also is patentable over Witham and Steuck.

Witham and Hu

Claim 18 is rejected under 35 U.S.C. 103(a) over Witham and Hu et al (US 5,209,849).

Applicants respectfully traverse. As set forth above, Witham at least does not teach or suggest a hydrophobic substrate coated with difunctional surface-modifying molecules crosslinked by UV, gamma, or X-radiation, to form a crosslinked hydrophilic polymeric network at the surface of the membrane, or polymerization of a polyfunctional monomer.

Hu does not remedy these deficiencies. Hu is cited for the use of DROCUR® 1173 as a photoinitiator. However, Witham is specifically directed to the plasma polymerization rather than UV treatment so as to provide benefits not believed to be available using UV treatment (see e.g. col. 2, lines 8-59). Further, Witham specifically uses hydrophilization of polyethersulfone membranes by way of co-polymerization of polyalkylene oxide and a polyfunctional monomer. Thus, there is no motivation to modify Witham as proposed and no reasonable expectation of success.

Accordingly, claim 1 is patentable over Witham and Hu. Claim 18 depends from claim 1 and, thus, also is patentable over Witham and Hu.

Witham and Wu

Claim 10 is rejected under 35 U.S.C. 103(a) over Witham and Wu et al (WO 00/50161).

Applicants respectfully traverse. As set forth above, Witham at least does not teach or suggest a hydrophobic substrate coated with difunctional surface-modifying molecules crosslinked by UV, gamma, or X-radiation, to form a crosslinked hydrophilic polymeric network at the surface of the membrane, or polymerization of a polyfunctional monomer.

Wu does not remedy these deficiencies. Wu is cited for the asserted use of crosslinked acrylic coatings having a pendant cationic group linked to the backbone of the coating.

However, Wu, in combination with Witham still would not remedy the above-noted deficiencies.

Accordingly, claim 1 is patentable over Witham and Wu. Claim 10 depends from claim 1 and, thus, also is patentable over Witham and Wu.

Witham and Hou

Claim 11 is rejected under 35 U.S.C. 103(a) over Witham and Hou et al. (WO 00/50160)

Applicants respectfully traverse. As set forth above, Witham at least does not teach or suggest a hydrophobic substrate coated with difunctional surface-modifying molecules crosslinked by UV, gamma, or X-radiation, to form a crosslinked hydrophilic polymeric network at the surface of the membrane, or polymerization of a polyfunctional monomer.

Wu does not remedy these deficiencies. Hou is cited for the asserted use of cross-linked acrylic coatings having fixed negative charge.

However, Hou, in combination with Witham still would not remedy the above-noted deficiencies.

Accordingly, claim 1 is patentable over Witham and Hou. Claim 11 depends from claim 1 and, thus, also is patentable over Witham and Hou.

CONCLUSION

In view of the foregoing, Applicants request reconsideration and allowance of claims 1-22 and 48-58.

It is believed that no fees are required for consideration of this response. However, if for any reason the fee paid is inadequate or credit is owed for any excess fee paid, the Office is hereby authorized and requested to charge Deposit Account No. **04-1105**.

Respectfully submitted,

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